

Amendments to the Claims

The applicants hereby add new claims 28 and 29. This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (previously presented) A sensor comprising:

a substrate;

a confinement structure created from materials applied to the substrate by deposition, wherein the confinement structure comprises at least a first limiting structure defining a first interior space;

a transducer proximal to the first interior space; and

a first synthetic polymer capable of selectively binding a first analyte, within the confinement structure.

2.(original) A sensor as claimed in claim 1, wherein the confinement structure further comprises a second limiting structure defining a second interior space, the second interior space containing the first interior space.

3. (previously presented) A sensor as claimed in claim 2, wherein the confinement structure further comprises one or more further limiting structures defining one or more further interior spaces, the one or more further interior spaces each containing an interior space.

4. (previously presented) A sensor as claimed in claim 1, wherein the first synthetic polymer capable of selectively binding a first analyte is disposed in the first interior space.
5. (previously presented) A sensor as claimed in claim 3, wherein the first synthetic polymer capable of selectively binding a first analyte is disposed in a space selected from the group consisting of: the second interior space, and a further interior space.
6. (previously presented) A sensor as claimed in claim 1, wherein the internal diameter of the first limiting structure is about 10-350 μm .
7. (previously presented) A sensor as claimed in claim 1, wherein height of the first limiting structure is about 1-10 μm .
8. (previously presented) A sensor as claimed in claim 2, wherein the internal diameter of the second limiting structure is about 50-600 μm .
9. (previously presented) A sensor as claimed in claim 2, wherein the height of the second limiting structure is about 1- 100 μm .
10. (previously presented) A sensor as claimed in claim 2, wherein the limiting structures of the confinement structure are annular.

11. (previously presented) A sensor as claimed in claim 1, wherein the sensor further comprises:

at least one additional confinement structure;

a transducer proximal to the first interior space of each of the at least one additional confinement structures; and

a material contained within the at least one additional confinement structure, wherein the material is selected from the group consisting of: the synthetic polymer capable of selectively binding a first analyte, a further synthetic polymer capable of selectively binding a further analyte, and a reference material.

12. (previously presented) A sensor as claimed in claim 1, wherein the first synthetic polymer is a molecularly imprinted polymer.

13. (previously presented) A sensor as claimed in claim 1, wherein the first synthetic polymer is a polymer capable of selectively binding a substance selected from the group consisting of: morphine, propofol, an antibiotic, and IMA.

14. (original) A sensor as claimed in claim 11, wherein the further synthetic polymer is a molecularly imprinted polymer.

15. (original) A sensor as claimed in claim 11, wherein the sensor comprises at least one additional confinement structure having a reference material therein, and the first synthetic polymer is a molecularly imprinted polymer and the reference material is a

corresponding non-imprinted polymer.

16. (previously presented) A sensor as claimed in claim 1 wherin a space selected from the first, second and a further interior space contains a material selected from the group consisting of a conducting material and a mediator.

17. (original) A sensor as claimed in claim 16, wherein the conducting material is an electrolyte.

18. (previously presented) A sensor as claimed in claim 1, wherein the at least one confinement structure further comprises one or more additional substances which provide a specific environment therein.

19. (previously presented) A sensor as claimed in claim 18, wherein the specific environment is a non-aqueous environment.

20. (previously presented) A sensor as claimed in claim 1, wherein the transducer is disposed on the substrate.

21. (previously presented) A sensor as claimed in claim 1, wherein the transducer is selected from the group consisting of: an electrochemical, conductimetric, optical, fluorescent, luminescent, absorption, time-of-flight, gravimetric, strain or displacement, surface-acoustic wave, resonant, thermal transducer, and combinations thereof.

22. (previously presented) A sensor as claimed in claim 1, wherein the substrate is a silicon wafer.
23. (previously presented) A sensor as claimed in claim 1, wherein the substrate is substantially planar.
24. (previously presented) A sensor as claimed in claim 1, wherein the confinement structure is fabricated from a polyimide.
25. (previously presented) A method of detecting a target species in a sample comprising contacting a sensor as claimed in claim 1 with a sample containing or suspected to contain the target species.
26. (original) A method as claimed in claim 25, wherein the sample is returned to the patient.
27. (original) A method as claimed in claim 25, wherein the sample is not returned to the patient.
28. (new) A sensor as claimed in claim 1, wherein the first synthetic polymer is a polymer capable of selectively binding a substance selected from the group consisting of: morphine, propofol, an antibiotic, and IMA; wherein a space selected from the first, second and a further interior space contains a material selected from the group consisting of a conducting material and a mediator; and wherein the transducer is selected from the group consisting of: an

electrochemical, conductimetric, optical, fluorescent, luminescent, absorption, time-of-flight, gravimetric, strain or displacement, surface-acoustic wave, resonant, thermal transducer, and combinations thereof.

29. (new) A sensor as claimed in claim 1, wherein the first synthetic polymer is a polymer capable of selectively binding propofol; wherein a space selected from the first, second and a further interior space contains a conducting material; and wherein the transducer is an electrochemical transducer.